MEMORANDUM REPORT

McClelland engineers, inc. / geotechnical consultants

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SUBJECT: Base Map Preparation
Collingsworth Site
Houston, Texas

DATE: May 8, 1984

REPORT NO.: 0184-8033

TO: Koppers Company, Inc.
Koppers Building
Room 1201
Pittsburgh, Pennsylvania 15219

Attention: Mr. Charles Brush, P.E.

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Introduction

This report describes the base map preparation for the Collingsworth Site in Houston, Texas. This project was authorized by Koppers Purchase Order No. R4-1077 dated March 22, 1984. Services were provided in general accordance with our proposal dated March 8, 1984.

This report contains a brief description of the four tasks outlined in our proposal. Also included are copies of the site base map and the groundwater monitoring well location map.

Project Description

The Koppers Company is currently evaluating a 55-acre tract located at Collingsworth Street in Houston, Texas. This site was previously used by Koppers for wood preserving operations until 1962.

Our scope of work was organized into four separate work tasks. The objectives of the tasks are to provide Koppers with the necessary site information and maps to assist with evaluation of the site. The four tasks include:

Task 1 - Master Base Map
Task 2 - Groundwater Monitoring Well Location Map
Task 3 - Groundwater Elevations
Task 4 - Aerial Photographs

Each task is described in detail as follows.

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Task 1 - Master Base Map

We prepared a master base map of the site at a scale of 1 in. = 100 ft. The map includes the current ownership property lines and the previous

Koppers Company property lines. Because the base map will be used as a master, we have not included a drawing number, title, legend, etc. All map features are located with respect to the Texas State Plane Coordinate System Grid. As instructed, easements, right-of-ways, set backs, or other building restrictions are not included.

Information used to identify the current ownership property lines was obtained from volume 5308, page 535 and volume 4973, page 64 of the Harris County Deed Records (HCDR). Information used to construct the current Koppers Company property lines was obtained from a General Warranty Deed (volume 1190, page 158, HCDR) provided by Koppers. This deed transferred title to Merchants Fast Motor Lines, Inc., in 1962. The legal description provided in the deed was used to construct the previous Koppers property lines.

The legal description in the deed is based on the original Koppers purchase from the Wood Preserving Corporation in 1940. Our review of the deed indicates that boundary descriptions along the western border were not adequately detailed for accurate determination. Therefore, bearing and distance assumptions had to be made. In addition, some distance adjustments were made to permit traverse closure. In addition, a comparison with the 1951 insurance drawing (Marsh & McLennan, Inc.) also indicates potential discrepancies along the western border.

A print of the master base map is included in Attachments 1 and 2. The original drawings have been sent separately.

Task 2 - Groundwater Monitoring Well Location Map

We also prepared a groundwater monitoring well location map at a scale of 1 in. = 100 ft. This map was constructed as an overlay to the master base map.

The groundwater monitoring wells were installed during a previous investigation by McClelland Engineers for the Houston Transit Consultants. Survey information from the previous investigation was used to construct the well location map.

Included on the map is a table of the well locations expressed in State Plane Coordinates. Each well is consecutively numbered with a "CAV-OW" prefix (CAV - Cavalcade, OW - Observation Well). The following wells are not shown on the location map:

Well Number	Explanation
1. CAV-OW-05	Located offsite
2. CAV-OW-09	Damaged
2. CAV-OW-12	Not installed

Observation Well CAV-OW-06 is a deep well installed to a depth of about 180 ft below ground surface. The remaining shallow wells were installed into the uppermost aquifer to an average depth of about 20 ft.

A print of the groundwater monitoring well location map is included in Attachments 3 and 4. The original drawings have been sent separately.

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Task 3 - Groundwater Elevations

Task 3 included limited field surveying and water-level measurements to establish accurate groundwater elevations. This information can subsequently be used to compile a data base for evaluating fluctuations and seasonal variations in groundwater conditions.

The field surveying included re-establishing the location of Well CAV-OW-07 and measuring the top-of-casing elevation at each well. The elevations were established at a specified point on the protective casing. Because of slight variations in the casing elevation, all water-level measurements should be made at the same point on the casing. Table 1 includes a list of the top-of-casing elevation for each well.

On April 3, 1984, we measured water levels in the shallow wells. The measurements were made by using a weighted steel tape with the first 1-ft interval chalked for accurate reading. During this operation, a lead weight was accidently dropped in Well CAV-OW-14. In addition, all of the shallow wells were spray painted and remarked for easy identification. Table 2 includes a summary of the water-level elevations along with previous water-level readings taken by McClelland Engineers.

Task 4 - Aerial Photographs

Aerial photographs were obtained to provide a historical account of the site operations. We obtained photographic enlargements at a scale of 1 in. = 200 ft for the years of 1933, 1944, 1953, 1957, and 1964. Two prints for each year of coverage and full-size, half tone negatives have been sent separately.

The photographs are rectified by using aerotriangulation. Although the United States Department of Agriculture (USDA) indicates a scale accuracy of 99 percent, small variations and distortion will have a greater effect on small scale enlargements. As a check, we measured the accuracy for each of the photographs. The accuracy was calculated by scaling two known points on the photograph along a north south axis and an east-west axis. The scaled distances were compared with the survey information and averaged to compute the accuracy. The photograph accuracies are listed as follows:

Photograph	Year	Accuracy (percent)
722-2-43	1933	99
BQY-4C-144B	1944	98
BQY-13M-123D	1953	95
BQY-3FF-144B	1964	99

Attachments

The following maps are included in this report and are presented after the text.

Master Base Map - 1A	Attachment 1
Master Base Map - 1B	Attachment 2
Groundwater Monitoring Well Location Map - 2A	Attachment 3
Groundwater Monitoring Well Location Map - 2B	Attachment 4

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We appreciate this opportunity to support Koppers at the Collingsworth Site and look forward to continuing our services during the final investigation. We will call you in a few days to answer any questions that you may have about our report.

Sincerely,

McCLELLAND ENGINEERS, INC.

William R. Tobin

William R. Tobin
Geotechnical Engineer

Thomas W. Hoskings

Thomas W. Hoskings, Ph.D., P.E.
Project Manager

WRT/TWH/klb

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WELL NUMBER	TOP OF CASING ELEVATION (MSL)
CAV-OW-01	52.31
CAV-OW-02	53.89
CAV-OW-03	51.63
CAV-OW-04	53.21
CAV-OW-07	53.52
CAV-OW-08	52.82
CAV-OW-10	50.83
CAV-OW-11	51.86
CAV-OW-13	52.11
CAV-OW-14	52.50

TABLE 1
MONITORING WELL CASING ELEVATIONS